

1) Give an example of a conditional statement: \_\_\_\_\_

\_\_\_\_\_

2) Given any conditional statement with hypothesis (antecedent)  $P$  and conclusion (consequent)  $Q$ , the statement can be written symbolically as \_\_\_\_\_

3) There are three types of proofs we will discuss in this class. They are:

a) \_\_\_\_\_ b) \_\_\_\_\_ & c) \_\_\_\_\_

4) Consider the conditional statement  $P \Rightarrow Q$ .

a) To prove this by direct proof, the necessary structure is:

b) To prove this by contradiction, the necessary structure is:

c) To Prove this by contraposition, the necessary structure is:

5) Consider the original statement: “If it’s a triangle then it has 3 sides.”

(a) This is an example of a \_\_\_\_\_ statement.

(b) In the statement what is the antecedent ( $P$ ) and what is the consequent ( $Q$ ).

**P is the statement:** \_\_\_\_\_ **Q is the statement:** \_\_\_\_\_

(c) If you were going to construct a direct proof of the statement, what would be your “given”, and what would you put for “prove”?

**Given:** \_\_\_\_\_ **Prove:** \_\_\_\_\_

(d) **What is the converse of the statement?** \_\_\_\_\_

(e) If you were going to prove the original statement by contraposition, what would the first line of your proof be (hint: not what was “given”), AND what would you need to show/prove?

**What is your given/assumption:** \_\_\_\_\_

**What would you want to show/prove:** \_\_\_\_\_

(f) If you were going to prove the original statement by contradiction, what would the first line of your proof be (hint: not what was “given”), AND what would you need to show/prove?

6) “Disneyland is a noun”

a) Is this a statement? \_\_\_\_\_ Could this statement be considered a conditional statement? \_\_\_\_\_

b) To prove this by contradiction that this is a true conditional statement:

i. What would the first line (your assumption) of the proof be:

\_\_\_\_\_

ii. What are the contradicting statements in your proof? \_\_\_\_\_